# Hazard Evaluation

WAC 296-839-200

## Summary

**YOUR RESPONSIBILITY:**

**To make sure the hazardous chemicals are identified**

**You must**



Hazard Evaluation

# Hazard Evaluation

WAC 296-839-200

# Rule

## WAC 296-839-20005

## Conduct complete hazard evaluations

### IMPORTANT:

- Hazard evaluation is a process where hazards of chemicals are identified by reviewing available research or testing information. You aren't required to perform your own laboratory research or testing to meet the requirements of this section.
  - Information from hazard evaluations is used to complete material safety data sheets (MSDSs) and labels
  - MSDSs from your suppliers may be used to complete the hazard evaluation for chemicals you produce
  - MSDSs and labels are **NOT** required for chemicals that are determined to be nonhazardous
- Importers and manufacturers are required to develop MSDSs. If you choose to develop MSDSs for a product you don't import or manufacture, then this chapter also applies to you.



### You must

***(1)*** Describe in writing your procedures for conducting hazard evaluations.

***(2)*** Conduct a complete hazard evaluation for ALL chemicals you produce or import to determine if they're hazardous chemicals.

- Identify and consider available scientific evidence of health and physical hazards
- Evidence that meets the criteria in Table 3 must be used to establish a hazard
- Chemicals identified in a Table 4 source must be regarded as hazardous
- The scope of health hazards considered must include the categories in Tables 5 and 6
- If the chemical is a mixture, follow the additional criteria in Table 7.

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### WAC 296-839-20005 (Continued)

If you find evidence that meets the criteria in Table 3, use it in your hazard evaluation.

***Table 3***
***Criteria for Hazard Evidence***

| *Hazard* | *Criteria* |
|---|---|
| • Health hazard | • Where available, use human case reports of health effects<br>***and***<br>• One or more studies that<br>- Are based on human populations, if available, and animal populations<br>AND<br>- Report statistically significant conclusions of a hazardous effect or health hazard (as defined in this rule)<br>AND<br>- Have been conducted following established scientific principles<br>Note:<br>➢ If human data isn't available, use results of tests done on animals and other available studies to predict health effects on employees (for example, effects resulting from short and long-term exposures to chemicals).<br>➢ In vitro studies alone don't generally form the basis of a finding of hazard. |
| • Physical hazard | • Valid evidence that shows a chemical is any one of the following as defined in WAC 296-839-500:<br>- A combustible liquid<br>- A compressed gas<br>- Explosive<br>- Flammable<br>- An organic peroxide<br>- An oxidizer<br>- Pyrophoric<br>- Unstable (reactive)<br>- Water-reactive |

***-Continued-***

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**WAC 296-839-20005 (Continued)**

***Helpful Tool:***

***Information Resources for Preparing Material Safety Data Sheets and Labels***

In addition to Table 4, you may find this form useful when conducting hazard evaluations. You can find a copy of this form in the Resources Section of this book.

## You must

Chemicals identified in the sources listed in Table 4 must be assumed to be hazardous (including carcinogens and potential carcinogens).

***Table 4***
***Information Sources Identifying Hazardous Chemicals***

- Sources that address a broad range of hazard categories:
  - Chapter 296-62 WAC, General Occupational Health Standards, WISHA
  - 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA)
  - ***Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment,*** American Conference of Governmental Industrial Hygienists (ACGIH) (latest edition).
- Sources that identify carcinogens or potential carcinogens:
  - Chapter 296-62 WAC, General Occupational Health Standards, WISHA
  - 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA)
  - National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition)
  - International Agency for Research on Cancer (IARC) Monographs (latest editions).

***Note:***

***The Registry of Toxic Effects of Chemical Substances*** is published by the National Institute for Occupational Safety and Health (NIOSH) and identifies chemicals found to be potential carcinogens by the NTP and IARC.

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Chemicals meeting Table 5 definitions, along with the criteria for established evidence in Table 3, must be regarded as hazardous.

**Table 5 is NOT intended to present all hazard categories or test methods.** Available scientific data involving other test methods and animal species must also be evaluated to determine a chemical's hazards.

***Table 5***
***Standard Health Hazard Categories***

| ***A chemical is considered to be*** | ***IF*** |
|---|---|
| • A carcinogen | • The International Agency for Research on Cancer (IARC) considers it to be a carcinogen or potential carcinogen<br>***or***<br>• The National Toxicity Program (NTP) (latest edition) lists it as a carcinogen or potential carcinogen<br>***or***<br>• It's regulated by WISHA or OSHA as a carcinogen |
| • Corrosive | • It causes visible destruction of, or irreversible alterations in, living tissue (not inanimate surfaces) by chemical action at the site of contact<br>Example:<br>- A chemical is corrosive if tested on the intact skin of albino rabbits by a method described by the U.S. Department of Transportation (in Appendix A to 49 CFR Part 173) and, it destroys or changes (irreversibly) the structure of the tissue at the contact site after a 4-hour exposure period. |

Table 5 (Continued)



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**WAC 296-839-20005 (Continued)**

| *Table 5 (Continued)*<br>*Standard Health Hazard Categories* | |
|---|---|
| ***A chemical is considered to be*** | ***IF*** |
| • Toxic | • It has a median lethal dose (LD50) greater than 50 milligrams per kilogram, but no more than 500 milligrams per kilogram of body weight, when administered orally to albino rats weighing between 200 - 300 grams each.<br>***or***<br>• It has a median lethal dose (LD50) greater than 200 milligrams per kilogram, but not more than 1,000 milligrams per kilogram, of body weight when administered by continuous contact for 24-hours (or less if death occurs within 24-hours) with the bare skin of albino rabbits weighing between 2 - 3 kilograms each<br>***or***<br>• It has a median lethal concentration (LC50), in air:<br>- Greater than 200 parts per million, but not more than 2,000 parts per million (by volume of gas or vapor)<br>OR<br>- Greater than 2 milligrams per liter, but not more than 20 milligrams per liter, of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats, weighing between 200 - 300 grams each |
| • Highly toxic | • It has a median lethal dose (LD50) of 50 milligrams, or less, per kilogram of body weight when administered orally to albino rats weighing between 200 - 300 grams each<br>***or***<br>• It has a median lethal dose (LD50) of 200 milligrams, or less, per kilogram of body weight when administered by continuous contact for 24-hours (or less if death occurs within 24-hours) with the bare skin of albino rabbits weighing between 2 - 3 kilograms each<br>***or***<br>• It has a median lethal concentration of (LC50), in air, of:<br>- 200 parts per million (by volume), or less, of gas or vapor<br>OR<br>- 2 milligrams per liter, or less, of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200-300 grams each |

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| ***Table 5 (Continued)*** <br> ***Standard Health Hazard Categories*** | |
|---|---|
| ***A chemical is considered to be*** | ***IF*** |
| • An irritant | • It is ***not*** corrosive, but causes a reversible inflammatory effect on living tissue by chemical action at the contact site <br> Examples: <br> - The chemical is a skin irritant when tested on the intact skin of albino rabbits (by the methods of 16 CFR 1500.41) for 4 hours exposure, (or by other appropriate techniques) and the exposure results in an empirical score of 5 or more <br> - A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques |
| • A sensitizer | • It causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure |

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**WAC 296-839-20005 (Continued)**

Categories provided in Table 6 illustrate the broad range of target organ effects that must be considered when conducting hazard evaluations. Chemicals meeting Table 6 definitions, along with the criteria for established evidence in Table 3, must be regarded as hazardous.

Examples provided in Table 6 are **NOT** intended to be a complete list.

***Table 6***
***Examples of Target Organ Effect Categories***

| *Category* | *Definition* | *Examples of Signs and Symptoms* | *Examples of Chemicals* |
|---|---|---|---|
| Hepatotoxins | Cause liver damage | • Jaundice<br>• Liver enlargement | • Carbon tetrachloride<br>• Nitrosamines |
| Nephrotoxins | Cause kidney damage | • Edema<br>• Proteinuria | • Halogenated hydrocarbons<br>• Cadmium |
| Neurotoxins | Cause primary toxic effects on the nervous system | • Narcosis<br>• Behavioral changes<br>• Decrease in motor functions | • Mercury<br>• Carbon disulfide<br>• Lead |
| Chemicals that act on the<br>• Blood<br>***or***<br>• Hematopoietic (blood forming) system | • Decrease hemoglobin function<br>***or***<br>• Deprive the body tissues of oxygen | • Cyanosis<br>• Loss of consciouness | • Carbon monoxide<br>• Cyanides<br>• Benzene |
| Chemicals that damage the lungs | • Irritate lungs<br>***or***<br>• Damage pulmonary tissue | • Cough<br>• Tightness in chest<br>• Shortness of breath | • Silica<br>• Asbestos |
| Reproductive toxins | Affect reproductive capabilities, including:<br>• Chromosomal damage (mutation)<br>• Effects on fetuses (teratogenesis) | • Birth defects<br>• Sterility | • Lead<br>• 1,2-Dibromo-3-chloropropane (DBCP)<br>• Nitrous Oxide |
| Cutaneous (skin) hazards | Affect the dermal layer of the body | • Defatting of the skin<br>• Rashes<br>• Irritation | • Ketones<br>• Chlorinated compounds |
| Eye hazards | Affect the eye or ability to see | • Conjunctivitis<br>• Corneal damage | • Organic solvents<br>• Acids |

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| *Table 7*<br>*Criteria for Evaluating Chemical Mixtures* | |
|---|---|
| ***IF a mixture*** | ***THEN*** |
| • Has been thoroughly tested as a whole for a physical or health hazard | • You must use those results |
| • Has ***not*** been tested as a whole for a health hazard | • You must:<br>- Evaluate EACH ingredient in the mixture to determine the hazards<br>- Consider the mixture to have the same hazard as each ingredient determined to be hazardous |
| • Has ***not*** been tested as a whole for physical hazards | • You must:<br>- Use any scientifically valid data available to evaluate the potential physical hazards of the mixture |

## WAC 296-839-20010
## Provide access to hazard evaluation procedures

### You must

- Provide access to your written hazard evaluation procedures when requested by any of the following:
  - Employees
  - Designated representatives of employees
  - Representatives of the Department of Labor and Industries
  - Representatives of the National Institute for Occupational Safety and Health (NIOSH).